

## **REMARKS**

Claims 3-10 and 13-24 are pending in this application. Claims 4, 5, 14, 15, 21, and 23 are in independent form. By virtue of this Amendment, Applicant adds new claims 21-24 and amends claims 3 and 13 to indirectly depend from claims 21 and 23, respectively.

### **I. Allowed Claims:**

At numbered paragraph 3 of the Office Action, the Examiner allows claims 4-10 and 14-20.

### **II. Claim Rejection on Prior Art Grounds:**

The Examiner rejects claims 3 and 13 under 35 U.S.C. §103(a) as being obvious over US 5,307,001 to Heavey ("Heavey") in view of JP 7-73903 to Hara et al. ("Hara"). Applicant respectfully traverses this rejection in view of the following remarks.

As an initial matter, new claims 21-24 respectively correspond to original claims 1 and 2, claim 11 (as amended April 18, 2003), and original claim 12. Claims 3 and 13, which had been previously rewritten to capture allowable subject matter, are amended to depend from claims 22 and 24, respectively.

The rejection grounds rely on the Heavey reference to teach most of the features of the present invention, except for the "overcharge time" recitations of claims 3 and 13. Therefore, the rejection grounds look to the Hara reference to allegedly teach this feature. This rejection position is not convincing for the following reasons.

#### The Primary Reference to Heavey

Applicant acknowledges that Heavey's battery charger implements an "overcharge" feature that occurs after the battery has reached a gassing point in the charge cycle. Once the gassing point has been reached, the charger continues to run for an additional four hours to finish charging the battery to capacity. Put differently, Heavey's overcharge feature relates to an overcharge

duration (or time period). During the overcharge duration, however, the charger continues to charge the battery at the same charge current that is normally applied during the charge cycle. In this regard, the Heavey reference teaches nothing more than the conventional charging technique disclosed as background in the present specification.<sup>1</sup>

In brief, Heavey does not teach or suggest “the charging current and the overcharge current increment” to the battery as recited in claims 21 and 23, and does not teach or suggest supplying the resulting overcharge current to the battery during charging, as recited in claims 21 and 23. This is because Heavey’s overcharge feature relates to time (not current).

Turning to the next point, the rejection grounds cite a portion (claim 7) of the Heavy reference as allegedly teaching the overcharge feature of the claimed invention. The heavy reliance upon claim 7 of Heavey is misplaced. This is because claim 7 of the reference does not teach or suggest supplying the battery with an overcharge current that comprises the sum of a charging current and an overcharge current increment, as claimed in claims 21 and 23.

Applicant respectfully directs the Examiner’s attention to column 8, lines 50-64 of the Heavey reference for further clarification. Here, Heavey explains that upon identifying a gas point in the charge cycle, a signal (called “> 80% CHARGE” signal) is provided to trigger the start of a four hour timer. The four hour timer determines the duration of the overcharge. The Examiner is also respectfully invited to review column 11, lines 4-14 of the Heavey reference, which discloses a similar overcharge feature. Heavey does not, however, teach or suggest increasing the charging current by an overcharge current increment to yield an overcharge current. The assertions in the rejection grounds to the contrary are tenable only by placing a strained interpretation on the reference.

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<sup>1</sup> Spec., paragraph bridging p.3-4.

### The Secondary Reference to Hara

Applicant respectfully submits that claims 3 and 13 are patentable by virtue of their dependency from claims 21 and 23, respectively, and because the secondary reference to Hara does not teach or suggest the features upon which the Examiner relies to reject the claims.

In particular, the limited translation of the Hara's abstract (as best understood) merely indicates that multiple charging modes may be provided depending upon a desired energy efficiency and state of charge. For example, if only a short distance is to be traveled, then an economy setting may be selected to achieve a state of charge of 60% of the battery capacity. If a long distance is to be traveled, then the battery may be overcharged in a energy inefficient process. This limited translation simply has nothing to do with overcharging the battery at a time when the state of charge "reaches 60%" (as recited in claim 3 or "reaches 50%" (as recited in claim 13).

### **CONCLUSION**

For at least the foregoing reasons, Applicant respectfully requests that the prior art rejection be reconsidered and withdrawn. Applicant respectfully submits that claims 21, 23, 3, and 13 are patentable, and that claims 22 and 24 are patentable at least by virtue of their dependencies.

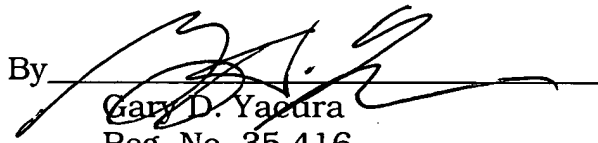
If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

HARNESS, DICKEY & PIERCE, PLC

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